ROUTE CONCEPT REPORT

ROUTE 29

1-LAK-29-0.0/52.5

All information in this Route Concept Report is subject to change as conditions change and new information is obtained.

I approve this Route Concept Report to guide today's route development decisions and/or recommendations.

Approval Recommended:

9-29-89

JERRY HAYNES Date
Deputy District Director
Office of Project Development
and Construction

Approval Recommended:

9/25/89

RICK KNAPP Date
Deputy District Director
Office of Planning
and Programming

Approved:

9-29-89

E. F. POCH Date
District Director
of Transportation
District 1

ROUTE CONCEPT REPORT

Statement of Planning Intent

The Route Concept Report (RCR) is a planning document which describes the Department's basic approach to development of a given route. Considering reasonable financial constraints and projected travel demand over a 20-year planning period, the RCR defines an appropriate type of facility and level of service for each route. The objective of the effort is to provide a better basis for the development of the State Transportation Improvement Program and for determination of the appropriate concept for future highway projects.

Route Concept Reports are prepared by District staff in cooperation with local and regional agencies. They will be updated as necessary as conditions change or new information is obtained.

Route Concept Reports are a preliminary planning phase that lead to subsequent programming and the project development process. As such, the specific nature of proposed improvements (i.e., roadway width, number of lanes, access control, etc.) may change in later project development stages, with final determinations made during the project report and design phases. Roadway widths, as discussed in Route Concept Reports, are used for the purpose of estimating improvement costs, and may change depending upon operating conditions and design standards at the time of actual project development.

Assumption

The following assumptions form the basis for the development of Route Concept Reports:

1. The relative importance of State highways in the District can generally be established based on the functional classification of the routes. In general, higher priorities will be given to major improvements on principal arterial routes as compared to minor arterials and collectors.

2. For routes the District can reasonably expect to improve (generally Principal Arterials), realistic concept LOS must be established for each route in order to have route concepts and route development plans which are possible to achieve, given a forecast of future revenues. A concept LOS is not established on routes which will only be rehabilitated and/or maintained.

3. Level of service and capacity calculations are based on the 1985 Highway Capacity Manual. Previous Route Concept Report level of service and capacity calculations were based on the 1965 Highway Capacity Manual.

4. The 1985 Highway Capacity Manual Chapter addressing two-lane highways does not set a maximum limit on the level of service attainable based on restricted design speed. District 1 uses the table in Chapter 5 page 15 to limit the level of service attainable due to restricted design speed. Further, District capacity calculations include a factor to increase capacity based on the length of passing lanes in two-lane segments.

5. Determinations of future LOS for the routes in District 1 are based in part upon Statewide and District forecasts of State highway travel developed by Caltrans.

6. Route concepts are generally uniform for an entire route, unless there is a major change in function along the route.

7. Major projects will be developed to meet standards acceptable to the Federal Highway Administration in order to receive Federal funding for projects. Otherwise, a "design exception" will be prepared during the project development process.

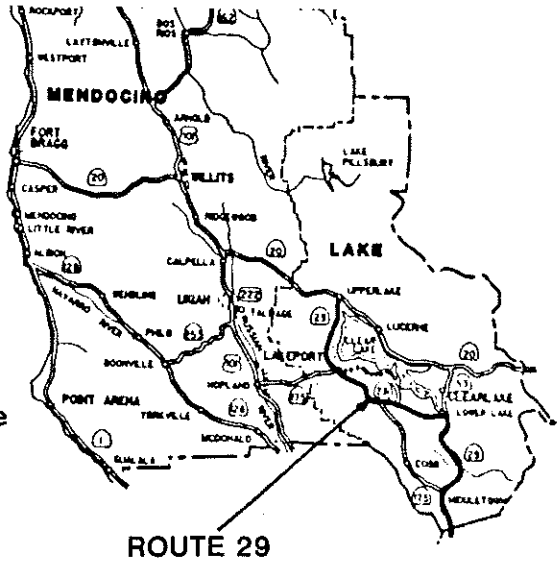
8. For all routes, safety projects will be pursued on an on-going basis in order to be responsive to safety problems as they are identified.

9. No planned or programmed improvements were assumed to be complete in analyzing present and future operating conditions. Section V of the Route Concept Report details programmed improvements in the 1988 STIP, with all costs in 1988 dollars.

10. An environmental document will not be required for Route Concept Reports. However, individual improvement projects identified in Route Concept Reports will follow the appropriate environmental process as required by law.

SUMMARY

ROUTE CONCEPT REPORT
FOR
ROUTE 29
1-LAK-29-0.0/52.5



ROUTE DESCRIPTION

Route 29 in District 1 begins at the Napa/Lake County line, traversing south-central Lake County to its terminus at Route 20 near Upper Lake. This Route is approximately 51 miles long in District 1.

Route 29 is a Federal Aid Primary Route, and is functionally classified as a Rural Minor Arterial from PM 0.0 to 20.3 and as a Rural Principal Arterial from PM 20.3 to 52.5. The Rural Principal Arterial portion of Route 29 combines with Routes 20 and 53 to form the principal arterial from Route 101 to Interstate 5.

This Route is also important as a connection between Lake County and the Napa Valley. As such, it serves Lake County residents primarily for utility trips, and non-residents primarily for recreational trips.

All of Route 29 in District 1 is included in the State's Freeway and Expressway system, and is eligible for designation as a Scenic Highway but has not been officially designated. The Route is not included in the "SHELL" Route System for the movement of extra-legal (permit) loads, however, STAA trucks are permitted on Route 29 in District 1 (except the LAK-29-0.0/5.8 segment).

The existing facility is typically a 2-lane expressway, with 12-foot lanes and 4- to 8-foot paved shoulders. One segment of the Route is 4-lane freeway, and other short segments are conventional two-lane highway. Horizontal and vertical alignments are both generally good, and Annual Average Daily Traffic (AADT) volumes range from 4200 to 9550. Truck volumes range from 5% to 8% of the AADT, and peak month average daily traffic volumes are generally about 120% of Annual Average Daily Traffic.

OPERATING CONDITIONS

The Minor Arterial portion of Route 29 currently operates at a "C" to "D" level of service, and is expected to deteriorate to an "E" level of service by the year 2010. The Principal Arterial portion of Route 29 currently operates at a "C" level of service from the junction of Route 53 to the southern terminus of the Lakeport freeway, and at an "A" to "B" level of service from that point north to Route 20. Level of service is expected to deteriorate to "D" and

"E" over all except the 4-lane segment of the Principal Arterial portion of Route 29 by the year 2010. The 4-lane segment (LAK-29-R40.9/R48.4) is expected to maintain an "A" level of service through the year 2010.

ROUTE CONCEPT/RATIONALE

Rural Minor Arterial Portion (LAK-29-0.0/20.3):
The Rural Minor Arterial portion of Route 29 should remain as it is, a 2-lane conventional highway/expressway, maintained and rehabilitated as necessary on the basis of existing width. Safety and operational improvement projects should be considered as necessary. The concept level of service for the Rural Minor Arterial portion of Route 29 is "E".

This Route Concept for the Rural Minor Arterial portion of Route 29 was selected based on its function (as a Rural Minor Arterial), funding constraints, and competing priorities from other routes in the District.

Rural Principal Arterial Portion (LAK-29-20.3/52.5):
The Rural Principal Arterial portion of Route 29 should be upgraded to 4-lane freeway/expressway. This portion of the Route should be maintained and rehabilitated as necessary. Safety and operational improvements should be considered as necessary. The recommended concept LOS for the Rural Principal Arterial portion of Route 29 is "C".

This Route Concept for the Rural Principal Arterial portion of Route 29 was selected based on the Route's function (as a Principal Arterial), operating conditions, regional support for a 4-lane facility, and feasibility of development to 4-lane standards.

CONCERNS

Accidents are a concern on a portion (Lak-29-27.9/31.1) of the Lake-29-20.3/R34.6 segment. Further, level of service is expected to become a concern on all two-lane segments of the Route by the year 2010. These segments are as follows:

- LAK-29-20.3/R34.6
- LAK-29-R34.6/R40.9
- LAK-29-R48.4/52.5

IMPROVEMENTS NEEDED TO ACHIEVE ROUTE CONCEPT

Improvements necessary to achieve the Route Concept for Route 29 include upgrading a number of segments on the Principal Arterial portion to 4-lane freeway/expressway. It is anticipated that these improvements will cost approximately $61 million in 1988 dollars.

Safety and operational improvements (including barrier stripe mitigation) should be considered as necessary.

PRESENT AND FUTURE OPERATING CONDITIONS

ROUTE 29

PM R48.4/52.5
2-lane Conventional, Expressway
Terrain: Rolling, Gradeline: Flat
26'-42' paved
Existing: AADT=4400
(1988) LOS=B
Future: AADT=10700
(2010) LOS=D

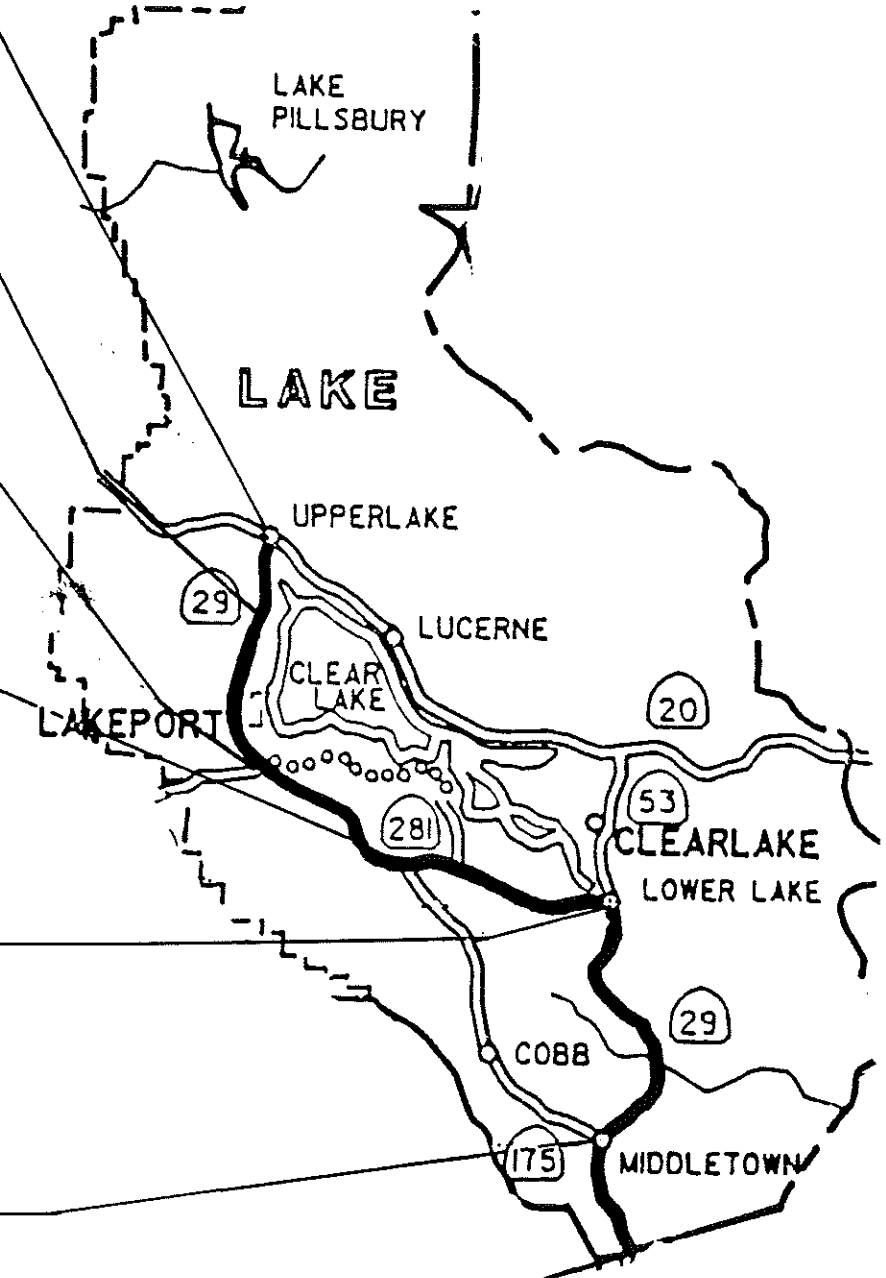
PM R40.9/R48.4
4-lane Freeway
Terrain: Flat, Gradeline: Flat
78' paved
Existing: AADT=4400-9650
(1988) LOS= A
Future: AADT=10700-23500
LOS= A

PM R34.6/R40.9
2-lane Expressway
Terrain: Flat, Gradeline: Flat
40'-74' paved
Existing: AADT=6000-9500
(1988) LOS=C
Future: AADT=14600-23200
(2010) LOS=E

PM 20.3/R34.6
2-lane Conventional, Expressway
Terrain: Rolling, Gradeline: Moderate
26'-45' paved
Existing: AADT=4250-7500
(1988) LOS=C
Future: AADT=10300-18300
LOS=E

PM 5.8/20.3
2-lane Expressway
Terrain: Rolling, Gradeline: Rolling
22'-44' paved
Existing: AADT=6200-7500
(1988) LOS=D
Future: AADT=15100-18300
LOS=E

PM 0.0/5.8
2-lane Conventional, Expressway
Terrain: Rolling, Gradeline: Rolling
24'-32' paved
Existing: AADT=4650-6200
(1988) LOS=C
Future: AADT=11400-15100
(2010) LOS=E



Accident rate less than 1.5 times the statewide average for all segments

ROUTE CONCEPT

o Rural Principal Arterial portion of Route 29: 4-lane freeway/expressway, maintained and rehabilitated as necessary. The concept level of service for this portion of Route 29 is "C".

o Rural Minor Arterial portion of Route 29: 2-lane conventional highway/expressway, maintained and rehabilitated as necessary. The concept level of service for this portion of Route 29 is "E".

ROUTE CONCEPT REPORT

ROUTE 29

I. ROUTE DESCRIPTION AND PURPOSE

Description

In District 1, Route 29 begins at the Napa/Lake County line and terminates in Lake County at Route 20 near the community of Upper Lake. South of District 1, Route 29 originates in Vallejo at Route 80 in District 4. The District 1 portion of Route 29 is approximately 51 miles in length and has a post mile description of: 01-Lak-29-0.0/52.5.

Route Purpose

Route 29 is functionally classified as a Rural Minor Arterial from post mile 0.0 at the Napa/Lake County line to post mile 20.3 at its junction with Route 53. From post mile 20.3 to its northern terminus at Route 20 (post mile 52.5), Route 29 is functionally classified as a Rural Principal Arterial. It combines with portions of Route 20 (Men-33.2/44.1, Lak-0.0/8.3 and 31.6/46.5) and Route 53 to provide the Principal Arterial routing from Route 101 to Route 5 in the Central Valley.

Route 29 is a part of the State's Freeway and Expressway System, and is eligible for designation as a Scenic Highway but has not been officially designated. It is also a Federal Aid Primary (FAP) Route. It is not a SHELL route (designated for use by extra-legal or permit loads), and is not included in the national network for STAA trucks. However, Route 29 is designated for use by STAA trucks (kingpin to rear axle length of up to 40') between Middletown and Route 20 (LAK-29-5.8/52.5).

Route 29 connects the Lake County area with the Napa Valley, passing through the City of Lakeport (population approximately 4,400 and the County seat), and the communities of Kelseyville, Lower Lake and Middletown (all with populations between 1,000 and 2,000).

Lake County residents use Route 29 primarily for utility trips within the County and to the Napa Valley, Santa Rosa, and the Bay Area. The southern portion of the Route is used by those employed at the geothermal plants in the southwestern portion of Lake County. Route 29 is also used for recreational trips primarily to and from the Napa Valley and the Bay Area.[1] It is at the north end of the Napa Valley, and tourists visiting the wine country often extend their trips north on Route 29 to Lake County.

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[1] Lake County 1976 State Highway Recreational Travel Study, Caltrans, Sept. 1979.

The Route experiences generally moderate non-motorized traffic, with concentrations around the populated areas adjacent to the Route.

II. Local & Regional Issues

Land Use

Land use along the Rural Minor Arterial portion of Route 29 (from the Napa/Lake County line to Route 53 at Lower Lake) is primarily a mix of open space scenic corridor with some low to moderate density residential development and agricultural uses. Commercial and more intensive residential development exists in and around the communities of Middletown and Lower Lake.

Land use along the Rural Principal Arterial portion of Route 29 in District 1 is generally open space scenic corridor between Lower Lake and just south of Kelseyville, except for limited commercial development near the Route 53 and Route 281 junctions. Between south of Kelseyville and the Route 20 junction, land use is primarily intensive agricultural mixed with low density residential. Higher density residential and some commercial development exists near Kelseyville and Lakeport.

Land use adjacent to Route 29 in District 1 is expected to change considerably as Lake County experiences rapid growth. Development is expected to occur primarily in and adjacent to existing communities, although some increase in land use intensity is expected in rural areas.

In addition to traffic impacts of anticipated development, the Route currently experiences substantial recreational traffic, and this traffic is expected to continue to increase.

Anticipated long-term right of way needs for Route 29 in District 1 include right of way to upgrade the Principal Arterial portion of the Route to 4-lane freeway/expressway standards (including interchanges at some locations). Short term needs may include right of way for storm damage reconstruction, maintenance, rehabilitation, or safety/operational improvements.

Environmental Considerations

Primary environmental considerations for Route 29 include the following:

- Flood hazards on St Helena and Putah Creeks
- Archaeological sensitivity along all of Route 29 north of the Community of Middletown (LAK-29-5.8)

Regional Transportation Planning

The 1988 Lake County Regional Transportation Plan, Needs Assessment section, calls for operational and safety improvements on the Minor Arterial portion of Route 29 (LAK-29-0.0/20.3), and a 4-lane freeway/expressway facility on the Principal Arterial portion (LAK-29-20.3-52.5).

Caltrans and the Lake County/City Area Planning Council (LC/CAPC) are undertaking a cooperative study to determine appropriate Route Concepts for State Highways in Lake County, and to develop priorities for the improvement of State Highway Routes.

The five highest new facility improvements identified in this study (priorities #1, #3, #4, and #5 are on Route 29) include:

Priority No.	Improvement Location	Type of Improvement
1	LAK-29-27.9/31.1 Route 281 to Route 175	4-E
2	LAK-53-0.0/3.5 Convert Clearlake Expressway to Freeway	4-F
3	LAK-29-19.6/21.5 Lower Lake Bypass	4-F
4	LAK-29-R34.6/R40.9 Kelseyville to South Lakeport	4-F/E
5	LAK-29-23.9/27.9 West of Lower Lake to Route 281	4-E

III. EXISTING FACILITIES

Route 29 is generally a 2-lane expressway, traversing terrain that varies from flat to mountainous. One segment (LAK-29-R40.9/R48.4) is 4-lane freeway, and the segment between Lower Lake and Route 175 south of Kelseyville (LAK-29-20.3/31.1) is 2-lane conventional highway. Lane width is generally 12', and paved shoulders typically range from 2- to 10-foot, however, lane and paved shoulder widths vary considerably over the Route. Actual lane, paved shoulder, and total paved width ranges are shown in the table on the following page.

HIGHWAY WIDTH
ROUTE 29

Post Mile	Location	No. of Lanes-Highway Type	Lane Width	Paved Shoulder Width	Total Paved Width
LAK-29-0.0/5.8	Napa/Lake County Line to Middletown	2-C/E	12′	0′-4′	24′-32′
LAK-29-5.8/20.3	Middletown to Lower Lake	2-E	11′-12′	0′-4′	22′-44′
LAK-29-20.3/R34.6	Lower Lake to Kelseyville	2-C/E	12′-14′	2′-8′	26′-45′
LAK-29 - R34.6/R40.9	Kelseyville to 0.5 Mi. So. Lakeport Blvd.	2-E	12′	8′-10′	40′-74′
LAK-29-R40.9/R48.4	0.5 Mi. So. Lakeport Blvd. to 4.1 Mi. So. Jct. Rte. 20	4-F	12′	10′	78′
LAK-29-R48.4/52.5	4.1 Mi. So. Jct. Rte. 20 to Jct. Rte. 20	2-C/E	12′	1′-10′	26-42′

Horizontal alignment is good, with minimum curve radii of 750 feet, except at the intersection with Route 53 where Route 29 makes a right angle turn.

Vertical alignment is gently rolling as the highway follows St. Helena Creek and numerous other creeks from the Napa/Lake County line to the community of Lower Lake. From Lower Lake to Kelseyville, the hills traversed become larger and grades steeper. The remainder of the Route (north of Kelseyville) is generally flat with most grades under three percent.

Right of way widths range from a minimum of 60 feet for much of the right of way from Lower Lake to south of Kelseyville (PM 20.3/31.1) to a maximum of over 300 feet on the Lakeport Freeway (R40.9/R48.6). Virtually all of the right of way is either owned by the State or the State has acquired an easement.

Route 29 intersects with several other routes as shown in the table on the following page. Also identified is the post mile at which the routes intersect, the functional classification and approximate AADT of the intersecting route at the intersection.

ROUTES INTERSECTING ROUTE 29 IN DISTRICT 1

Route	Intersection (Route 29 PM)	Functional Classification (Intersecting Route)	Approx. AADT (1988) of Intersecting Route
175	5.8	Major Collector	2,500
53	20.3	Principal Arterial	12,600
281	27.9	Major Collector	3,000
175	31.0	Major Collector	700
175	R40.1	Minor Arterial	1,300
20	52.5	Principal Arterial (back)	5,400
		Minor Arterial (Ahead)	6,200

Route 29 between the Napa/Lake County line and Lakeport is served by Greyhound Bus Lines. Buses make trips daily between Lakeport and San Francisco.

A State-owned park and ride lot has been developed south of Lakeport (LAK-29-39.8) and another is located just off Route 175, less than one mile from Route 29 (LAK-175-27.8).

Lampson Field, a public use airport less than one mile from Route 29, has the highest number of aircraft operations of all airports in Lake County and is located between Lakeport and Kelseyville. This airport has approximately 150 based aircraft and experiences approximately 40,000 aircraft operations annually.

No railroads parallel or cross Route 29 within District 1.

IV. OPERATING CONDITIONS

Traffic Information

The table on the following page summarizes projected Annual Average Daily Traffic (AADT) volumes for the 1988 year, and includes projections of future AADTs for the year 2010 on the major segments of Route 29. Also included are 20-year growth factors, truck volumes expressed as percent of AADT, and peak hour volume to capacity (v/c) ratios.

TRAFFIC DATA
ROUTE 29

Post Mile/ Location	AADT Present (1988)/ Future (2010)	Present Peak Hour Volume[2]	Percent Trucks In AADT[3]	Average V/C Present (1988)/ Future (2010)	20-Year Growth Factor
LAK-29-0.0/5.8 Napa/Lake County Line to Middletown	4650-6200/ 11400-15100	500-750	3%	0.26/ 0.64	2.40
LAK-29-5.8/20.3 Middletown to Lower Lake	6200-7500/ 15100-18300	500-600	6%	0.40/ 0.99	2.40
LAK-29-20.3/R34.6 Lower Lake to Kelseyville	4250-7500/ 10300-18300	375-700	7%	0.25/ 0.61	2.40
LAK-29-R34.6/R40.9 Kelseyville to Lakeport Blvd.	6000-9500/ 14600-23200	500-800	7%	0.32/ 0.78	2.40
LAK-29-R40.9/R48.4 Lakeport Blvd. to 4.1 mi. So. Jct. Rte. 20	4400-9650/ 10700-23500	375-800	6%	0.10/ 0.25	2.40
LAK-29-R48.4/52.5 4.1 Mi. So. Jct. Rte. 20 to Jct. Rte. 20	4400/ 10700	375-400	6%	0.16/ 0.39	2.40

Peak month average daily traffic volumes for Route 29 range between 115% and 130% of AADT. Peak hour average daily traffic volumes on Route 29 are approximately 10 percent of the AADT.

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[2] Calculated based on "1987 Traffic Volumes on California State Highways".

[3] Weighted average from "1986 Annual Average Daily Truck Traffic on California State Highways".

Level of Service

The following chart identifies the present and future levels of service along Route 29:

LEVEL OF SERVICE
ROUTE 29

Post Mile	Location	Present (1988)	Future (2010)
LAK-29-0.0/5.8	Napa/Lake County Line to Middletown	C	E
LAK-29-5.8/20.3	Middletown to Lower Lake	D	E
LAK-29-20.3/R34.6	Lower Lake to Kelseyville	C	E
LAK-29-R34.6/R40.9	Kelseyville to 0.5 Mi. So. Lakeport Blvd.	C	E
LAK-29-R40.9/R48.4	0.5 Mi. So. Lakeport Blvd. to 4.1 Mi. So. Jct. Rte. 20	A	A
LAK-29-R48.4/52.5	4.1 Mi. So. Jct. Rte. 20 to Jct. Rte. 20	B	D

Accident Rates

For the period 7-1-85 through 6-30-88, actual reported accident statistics for Route 29 were compared with the expected Statewide average for similar facilities. Based on the segmentation listed in the table on the following page, none of the segments have accident rates greater than 1.5 times (150% of) the expected Statewide average. However, several segments of Route 29 have accident rates which exceed expected Statewide averages. Further, specific locations may exist with poor accident experiences.[4] The District has an established accident surveillance and monitoring process which investigates and recommends safety improvements for specific locations with historically poor accident records as they are identified.

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[4] The Lak-29-27.9/31.1 portion of the Lak-29-20.3/R34.6 segment has an accident rate which exceeds one and one-half times the Statewide average, based on similar facilities.

Actual accident rates and expected Statewide average accident rates (both expessed as accidents per million vehicle miles) are shown in the table below:

ACCIDENT RATES
ROUTE 29

Post Mile	Location	Accident Rate	Statewide Average	Accident Rate As a Percent of Statewide Average
LAK-29-0.0/5.8	Napa/Lake Co. Line to Middletown	1.21	1.16	104%
LAK-29-5.8/20.3	Middletown to Lower Lake	1.26	1.04	121%
LAK-29-20.3/R34.6	Lower Lake to Kelseyville	1.83	1.64	112%*
LAK-29-R34.6/R40.9	Kelseyville to 0.5 Mi. So. Lakeport Blvd.	1.08	0.81	133%
LAK-29-R40.9/R48.4	0.5 Mi. So. Lakeport Blvd. to 4.1 Mi. So. Jct. Rte. 20	0.25	0.50	50%
LAK-29-R48.4/52.5	4.1 Mi. So. Jct. Rte. 20 to Jct. Rte. 20	1.08	1.67	65%

* The Lake-29-27.9/31.1 portion of this segment has an accident rate which exceeds one and one-half times the Statewide average.

Historic Maintenance and Road Closure Locations

No chronic maintenance or road closure locations have been identified on Route 29 over the last three years. Further, no chronic maintenance or road closure concerns were identified in the previous Route 29 Route Concept Report.

V. PROGRAMMED IMPROVEMENTS

Three improvements on Route 29 are included in the 1988 State Transportation Improvement Program (STIP). They are shown in the listing on the following page:

IMPROVEMENTS IN THE 1988 STIP
ROUTE 29

POST MILE	LOCATION	IMPROVEMENT	FISCAL YR. PROGRAMMED	COST IN MILLIONS
LAK-29-0.2/9.8	0.2 to 0.8 mi. north of the Napa/Lake County line	Bridge widening and rail upgrade	92/93	$1.9
LAK-29-20.3/31.5	Lower Lake to 0.4 mi. north of the Route 175 junction	Roadway rehabilitation and resurfacing (Portions)	88/89	$1.8
LAK-29-24.0/R40.1	Various Locations	Metal beam guard rail	88/89	$0.2

No new facility or major operational improvements projects for Route 29 in District 1 are included in the 1988 STIP.

VI. ROUTE CONCEPT AND RATIONALE

Concept for Route Improvement

Rural Minor Arterial Portion (LAK-29-0.0/20.3):
The Rural Minor Arterial portion of Route 29 is important as a highway connection with the Napa Valley. This portion of the Route is used by those employed at the geothermal plants in the southwestern portion of Lake County, and for recreational trips primarily to and from the Napa Valley and the Bay Area.

THE RURAL MINOR ARTERIAL PORTION OF ROUTE 29 SHOULD REMAIN AS IT IS, A 2-LANE CONVENTIONAL HIGHWAY/EXPRESSWAY.

Level of service on the Rural Minor Arterial portion of Route 29 currently ranges from "C" to "D" during peak hour periods. With projected traffic increases, level of service is expected to decrease to "E" by the year 2010. Although this is less than desirable, it is not considered sufficient justification to plan or program future capacity improvements in view of the competition for projected revenues from highways of greater significance than the Rural Minor Arterial portion of Route 29. Considering this, AN "E" CONCEPT LEVEL OF SERVICE HAS BEEN ESTABLISHED. As such, improvements to increase capacity will not be considered until the facility reaches capacity.

Rural Principal Arterial Portion (LAK-29-20.3/52.5):
The Rural Principal Arterial portion of Route 29 combines with portions of Route 20 (Men-33.2/44.1, Lak-0.0/8.3 and 31.6/46.5) and Route 53 to provide the Principal Arterial routing from Route 101 to Route 5 in the Central Valley. It is also regionally important, as it serves the City of Lakeport (County seat), and the Communities of Kelseyville and Lower Lake (some of the larger Communities in Lake County).

High traffic and population growth are projected for Lake County over the next 20 years. Considering this, the Route's Rural Principal Arterial status, and regional support for a 4-lane facility, and feasibility of development to 4-lane standards, THE RURAL PRINCIPAL ARTERIAL PORTION OF ROUTE 29 SHOULD BE UPGRADED TO 4-LANE FREEWAY/EXPRESSWAY.

Level of service on the Rural Principal Arterial portion of Route 29 currently ranges from "A" to "C" during peak hour periods. With projected traffic increases, level of service is expected to decrease to between "D" and "E" on all but the 4-lane segment of Route 29 by the year 2010 if no improvements are made. Based on the Rural Principal Arterial functional classification and the concept 4-lane facility, a "C" CONCEPT LEVEL OF SERVICE HAS BEEN ESTABLISHED.

Concept For Rehabilitation

ROUTE 29 SHOULD BE MAINTAINED AND REHABILITATED AS NECESSARY. Based on current rehabilitation standards (3-R) in the Caltrans Highway Design Manual, existing roadway widths on Route 29 should be generally adequate to allow rehabilitation at the present width.

Safety and Operational Improvement Concepts

Safety appears to be a significant factor in considering the need for improvement for Route 29. While none of the segments in the Route Concept Report have an accident rate exceeding one and one-half times the Statewide average, a portion of one segment (LAK-29-27.9/31.1) has an accident rate nearly twice the Statewide average. This location is the highest rated new facility improvement identified in the recent Lake County/City Area Planning Council and Caltrans Cooperative Study.

In addition, several segments of Route 29 have accident rates in excess of the Statewide average. Safety improvements at spot locations will be considered as necessary on this Route.

Bridge replacement, storm damage, and operational improvement projects will also be considered as necessary. These projects, in addition to safety projects, should be constructed to appropriate State and/or Federal standards. When possible, consideration should be given to designing such projects so they will be usable as a part of the ultimate 4-lane facility.

Caltrans is currently barrier striping two-lane highways to comply with Federal standards. This will reduce the number of passing opportunities (and the level of service) on most two-lane highways (including Route 29). A number of barrier stripe mitigation candidate projects have been identified within District 1, including two on Route 29 (LAK-29-31.2/32.4 and LAK-29-35.1/36.1). Neither of the Route 29 candidates have been programmed to date. Depending upon the programming of 4-lane improvements, consideration should be given to development of these and other barrier stripe mitigation projects.

Route Concept Function

This Route Concept should serve as a guide for long range planning of improvements to Route 29. It will protect the State's investment in the Route, while providing for a facility that will accommodate anticipated rapid traffic growth.

The concept is generally consistent with District 4's concept for adjacent segments of Route 29 in Napa County (District 4 does not intend to make capacity increasing new facility improvements to adjacent segments of Route 29 in Napa County).

Alternative Concepts Considered

No alternative Route Concepts were considered for the Rural Minor Arterial portion of Route 29 in District 1. However, several alternative concepts were considered for the Rural Principal Arterial portion of the Route, including:

1. Maintain the existing facility
2. Construct additional passing lanes
3. Upgrade to a 4-lane conventional facility

Maintaining the existing facility would result in an "E" level of service for all 2-lane portions of Route 29 between Lakeport and Lower Lake by the year 2010. Constructing additional passing lanes would increase level of service; however, passing lanes would not be expected to raise future level of service above "E" on most segments.

Upgrading to a 4-lane conventional highway would be less expensive than upgrading to 4-lane freeway/expressway, but could be expected to generate more accidents. Based on anticipated future traffic volumes and generally minimal difference in cost between the 4-lane conventional facility and a 4-lane expressway, the 4-lane expressway is preferred.

While concept levels of service below "C" were considered, they did not appear appropriate in view of this Route's functional classification, regional importance and anticipated rapid traffic growth. Further, major improvements would be needed to maintain any concept level of service above an "E" through the 20 year period. Therefore, a "C" concept level of service was retained for the Rural Principal Arterial portion of Route 29.

VII. Areas of Concern

The following considers areas of concern on Route 29 based on an analysis of level of service and accident history. A segment is considered to be an "area of concern" if:

1. The concept level of service will not be achieved under present or future traffic conditions, or the segment operates at capacity during peak hour.

2. The total accident rate exceeds one and one-half the Statewide average for similar facilities.

On the chart below, an "X" indicates a concern based on these criteria:

AREAS OF CONCERN
ROUTE 29

Post Mile	Location	Level of Service Present (1988)	Level of Service Future (2010)	Accident Rate
LAK-29-0.0/5.8	Napa/Lake County Line to Middletown	____	____	____
LAK-29-5.8/20.3	Middletown to Lower Lake	____	____	____
LAK-29-20.3/R34.6	Lower Lake to Kelseyville	____	X	X*
LAK-29-R34.6/R40.9	Kelseyville to 0.5 Mi. So. Lakeport Blvd.	____	X	____
LAK-29-R40.9/R48.4	0.5 Mi. So. Lakeport Blvd. to 4.1 Mi. So. Jct. Rte. 20	____	____	____
LAK-29-R48.4/52.5	4.1 Mi. So. Jct. Rte. 20 to Jct. Rte. 20	____	X	____

*The LAK-29-27.9/31.1 portion of this segment has an accident rate which exceeds one and one-half times the Statewide average.

VIII. ULTIMATE TRANSPORTATION CORRIDOR

Anticipated long-term right of way needs for Route 29 in District 1 include right of way to upgrade the Principal Arterial portion of the Route to 4-lane freeway/expressway standards (including interchanges at some locations). Projected right of way needs are shown in the chart on the following page.

RIGHT OF WAY REQUIREMENTS
ROUTE 29

Post Mile	Ultimate Transportation Corridor	Local Master Plan
LAK-29-0.0/5.8	Existing R/W (100' minimum)	None Shown
LAK-29-5.8/20.3	Existing R/W (80' minimum, generally in excess of 100')	None Shown
LAK-29-20.3/R34.6	Additional R/W averaging approximately 100' in width and adjacent to existing R/W	None Shown
LAK-29-R34.6/R40.9	Additional R/W averaging approximately 100' in width and adjacent to existing R/W	None Shown
LAK-29-R40.9/R48.4	Existing R/W (Generally at least 200' in width)	None Shown
LAK-29-R48.4/52.5	Additional R/W to Construct a 4-lane facility	None Shown

IX. IMPROVEMENTS NECESSARY TO ACHIEVE THE ROUTE CONCEPT

No improvements should be necessary to maintain the concept level of service through the year 2010 on the Rural Minor Arterial portion of Route 29 (LAK-29-0.0/20.3).

Improvements necessary to maintain the concept level of service on the Rural Principal Arterial portion of Route 29 (LAK-29-20.3/52.5) would include upgrading all 2-lane segments to 4-lane freeway/expressway standards. It is anticipated that improving all of these 2-lane segments to 4-lane freeway/ expressway will cost approximately $61 million in 1988 dollars.

Safety and operational improvements should be considered as necessary throughout the Route.

X. COORDINATION WITH THE DISTRICT 1 LONG RANGE OPERATION PLAN

No operational improvements for Route 29 are proposed in the District 1 Long Range Operation Plan (October 1985).

DISTRICT 1 ROUTE 29
ROUTE CONCEPT REPORT SUMMARY
1-HUM-29-0.0/52.5

RCR Segment	Post Mile	ROUTE CONCEPT LOS	ROUTE CONCEPT Facility	RIGHT OF WAY REQUIREMENTS Ultimate Transportation Corridor	RIGHT OF WAY REQUIREMENTS Local Master Plan
1	LAK-29-0.0/5.8	E	2-C/E	Existing R/W (100' minimum)	None Shown
2	LAK-29-5.8/20.3	E	2-C/E	Existing R/W (80' min., generally 100' or more)	None Shown
3	LAK-29-20.3/R34.6	C	4-F/E	Additional R/W averaging 100' in width and adjacent to existing R/W	None Shown
4	LAK-29-R34.6/R40.9	C	4-F/E	Additional R/W averaging 100' in width and adjacent to existing R/W	None Shown
5	LAK-29-R40.9/R48.4	C	4-F/E	Existing R/W (generally at least 200' in width)	None Shown
6	LAK-29-R48.4/52.5	C	4-F/E	Additional R/W for a 4-lane facility.	None Shown

CONCEPT RATIONALE:

The concept for Route 29 from the Napa/Lake County line to the community of Lower Lake (LAK-29-0.0/20.3) was selected based on its function (Rural Minor Arterial), funding constraints, and competing priorities from other routes in the District.

The concept for Route 29 from the community of Lower Lake to its junction with Route 20 near the community of Upper Lake (LAK-29-20.3/52.5) was selected based on its function (as a Rural Principal Arterial), operating conditions, regional support for a 4-lane facility, and feasibility of development to 4-lane standards.

AREAS OF CONCERN

Current (1988): P.M. Lak-29-20.3/R34.6 (portion) accident concern

Future (2010): PM LAK-29-20.3/R34.6 LOS Concern
PM LAK-29-R34.6/R40.9 LOS Concern
PM LAK-29-R48.4/52.5 LOS Concern

IMPROVEMENTS

No major new facility improvements will be necessary to maintain the concept level of service on the Rural Minor Arterial portion of Route 29 (LAK-29-0.0/20.3). Improvements necessary to maintain the concept level of service on the Rural Principal Arterial portion of Route 29 (LAK-29-20.3/52.5) would include upgrading all 2-lane segments to 4-lane freeway/expressway standards. It is anticipated that improving all of these 2-lane segments to 4-lane freeway/expressway will cost approximately $61 million in 1988 dollars.

Safety and operational improvements should be considered as necessary.

PRESENT AND FUTURE OPERATING CONDITIONS

ROUTE 29

PM R48.4/52.5
2-lane Conventional, Expressway
Terrain: Rolling, Gradeline: Flat
26'-42' paved
Existing: AADT=4400
(1988) LOS=B
Future: AADT=10700
(2010) LOS=D

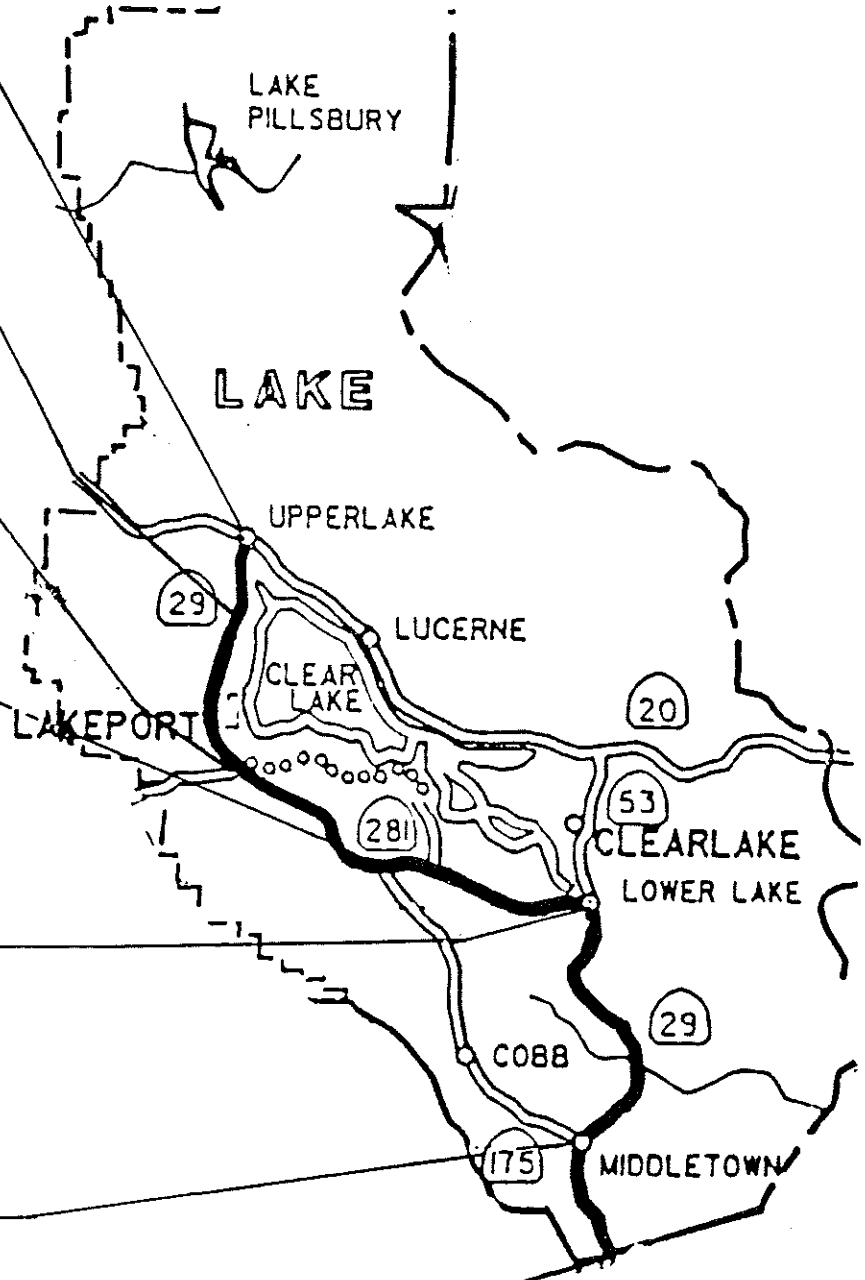
PM R40.9/R48.4
4-lane Freeway
Terrain: Flat, Gradeline: Flat
78' paved
Existing: AADT=4400-9650
(1988) LOS= A
Future: AADT=10700-23500
LOS= A

PM R34.6/R40.9
2-lane Expressway
Terrain: Flat, Gradeline: Flat
40'-74' paved
Existing: AADT=6000-9500
(1988) LOS=C
Future: AADT=14600-23200
(2010) LOS=E

PM 20.3/R34.6
2-lane Conventional, Expressway
Terrain: Rolling, Gradeline: Moderate
26'-45' paved
Existing: AADT=4250-7500
(1988) LOS=C
Future: AADT=10300-18300
LOS=E

PM 5.8/20.3
2-lane Expressway
Terrain: Rolling, Gradeline: Rolling
22'-44' paved
Existing: AADT=6200-7500
(1988) LOS=D
Future: AADT=15100-18300
LOS=E

PM 0.0/5.8
2-lane Conventional, Expressway
Terrain: Rolling, Gradeline: Rolling
24'-32' paved
Existing: AADT=4650-6200
(1988) LOS=C
Future: AADT=11400-15100
(2010) LOS=E



Accident rate less than 1.5 times the statewide average for all segments

ROUTE CONCEPT

o Rural Principal Arterial portion of Route 29: 4-lane freeway/expressway, maintained and rehabilitated as necessary. The concept level of service for this portion of Route 29 is "C".

o Rural Minor Arterial portion of Route 29: 2-lane conventional highway/expressway, maintained and rehabilitated as necessary. The concept level of service for this portion of Route 29 is "E".